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## **Human Capital and Environmental Engagement of SMEs in Pakistan: A Comparative Analysis of the Leather Industry**

**Aqueel I. Wahga**

Lecturer in Management

Email: [aqueel.wahga@open.ac.uk](mailto:aqueel.wahga@open.ac.uk)

**Richard K. Blundel**

Professor of Enterprise and Organisation

Email: [richard.blundel@open.ac.uk](mailto:richard.blundel@open.ac.uk)

**Anja Schaefer**

Senior Lecturer in Management

Email: [anja.schaefer@open.ac.uk](mailto:anja.schaefer@open.ac.uk)

Department for Public Leadership and Social Enterprise (PuLSE)

The Open University Business School

Michael Young Building

Milton Keynes, MK7 6AA, UK

Tel: +44 (0) 1908 659971

### **Abstract**

As part of a broader effort to reduce environmental degradation, small and medium-sized enterprises (SMEs) around the world are increasingly being required by different stakeholders to adopt more environmentally responsible business practices. The existing literature suggests that the main factors prompting SMEs to adopt environmental practices are: compliance with regulations, economic advantage and the realisation of personal ethical values. However, knowledge and understanding about the resources and capabilities that might enable SMEs to adopt environmental practices remains very limited. At the same time, much of the prior literature is about developed economies. The aim of this case study is to address these gaps in the literature by exploring the influence of human capital on environmental engagement of SMEs in Pakistan's leatherworking industry. Findings reveal that human capital does influence environmental practices in SMEs of leather industry. Compared to some earlier studies from developed economies, which emphasis more on informal environmental learning, this study finds that both formal education and informal environmental learning are important for better environmental engagement of SMEs. Importance of networking for seeking environmental knowledge also came up quite clearly. The implications are that well-designed and executed interventions could promote large-scale improvements in environmental performance of this industry sector. Furthermore, awareness programmes should aim, not simply to educate entrepreneurs and employees, but also to inspire them to pursue environmental opportunities.

**Key Words:** SMEs, environmental engagement, human capital, leather industry, Pakistan

## Introduction

One of the major challenges of twenty-first century is the environmental degradation, which has resulted in an increased level of environmental consciousness and concerns among different stakeholders across the globe. While different actors may be held responsible for damaging the natural environment, a considerable level of environmental issues are attributed to the activities of private sector enterprises (Gadenne et al., 2009). The result is that, consumers and other supply chain actors have started to put pressure on some companies to behave environmentally responsibly (Gold et al., 2010). In response, some firms have started to take actions to reduce their environmental footprints (Hofmann et al., 2012; Brammer et al., 2012). At the same time, governments have also started to take this issue more seriously and different policy interventions are introduced to mitigate the environmental impacts of businesses (Blundel et al., 2013). However, this is happening to varying degrees and is often constrained by lack of resources and/or other political priorities. Crucially, the public sector interventions for environmental improvement have mostly been steered towards large size firms (Blundel et al., 2013; Parker et al., 2009). One of the major reasons for this may be the inability of small and medium-sized enterprises (SMEs) to adopt environmental practices, mainly due to their resource constraints (Tilley, 2000). Nevertheless, given the considerable presence of SMEs in the economies worldwide, their environmental engagement, alongside other large size firms, is imperative to protect the natural environment (Williams and Schaefer, 2013; Spence, 2007).

SMEs are much appreciated for their socio-economic and technological contributions. However, their aggregate impact on the natural environment is also considered to be huge (Gadenne et al., 2009). In the UK, for example, 60% of the commercial waste is estimated to come from SMEs (Blundel et al., 2013). Likewise, in the European region SMEs are estimated to cause 64% of the overall environmental impacts (Calogirou et al., 2010). While the quantified environmental impact of SMEs can be traced for some developed countries, it remains largely unmeasured in many developing economies. Nevertheless, the environmental implications of SMEs for developing countries are also identified to be significant. In Pakistan, for example, SMEs are reported to have been generating water, air and noise pollution due to following energy intensive production processes, wastage of raw materials, high volumes of solid wastes and using toxic chemicals, and therefore causing a

number of health problems for employees and local communities in addition to damaging the wider natural environment (Lund-Thomsen, 2004; Ortolano et al., 2014).

Given the evidence that SMEs are damaging the natural environment globally, it is imperative to explore and understand what might motivate and enable these firms to reduce their environmental footprints. While previous research shows that the leading motivations for SMEs to adopt environmentally responsible practices can be compliance with regulations (Revell et al., 2010; Masurel, 2007), economic benefits and competitive advantage (Collins et al., 2007; Naffziger et al., 2003) and moral and ethical values of owner-managers (Williams and Schaefer, 2013; Battisti and Perry, 2011; Cordano et al., 2010), there is limited knowledge about the possible factors that can influence the ability of SMEs to become environmentally responsible enterprises (Hofmann et al., 2012). Moreover, the extant literature on environment-SMEs nexus is predominantly from developed economies (Parker et al., 2009). Certainly, in order to understand the environmental behaviour of SME globally, there is an urgent need to investigate environmental practices in SMEs in developing countries.

In order to fill some of the voids in literature, this study reports on findings about environmental issues and practices in SMEs<sup>1</sup> of Pakistan's leather industry. Theoretically, informed by human capital framework (Becker, 2009; Dakhli and De Clercq, 2004; Davidsson and Honig, 2003), it also explores the influence of human capital (as an enabler) on environmental engagement of different leatherworking firms.

Human capital represents the knowledge and skills that individuals may have learnt through formal and informal sources (Becker, 2009; Davidsson and Honig, 2003). Knowledge and skills become even more important assets when these are complemented by valuable experience. In fact, development of human capital can enhance productivity and efficiency of individuals by enabling them to do things in new ways (Becker, 2009; Diochon et al., 2008). It is therefore possible that SMEs better endowed with environmentally relevant human capital might be better positioned to respond to environmental challenges and opportunities.

### **Study participants**

Findings are grounded in evidence gathered from eight SMEs through eleven semi-structured interviews (Table 1). SMEs were from the Punjab province in Pakistan, which houses the largest number of tanneries. Sample was balanced in that 50 percent firms were smaller size units and 50 percent were of medium size. The core business activities of SMEs ranged from producing semi-finished and finished leather to leather garments and gloves manufacturing. Most of the firms were selling their products to domestic and international buyers. Mainly, respondents were owner-managers, with an exception of SME 5 where a senior manager was interviewed because of the unavailability of owner. Education wise, generally respondents had completed undergraduate and master level degrees, but some were uneducated even (SMEs 7 and 8). However, none of them had attained environment-related education formally. Those interested in learning were relying on informal methods such as self-reading and trainings, workshops, seminars and lectures that were delivered by different intermediary organisations and chemicals companies. These informal sources of learning are also noted by some researchers previously (Ortolano et al., 2014).

<<<< Insert Table 1 here >>>>

### **Perceived environmental issues**

The thematic analysis<sup>2</sup> (Braun and Clarke, 2006; Miles and Huberman, 1994) of data confirmed findings of some earlier studies (Lund-Thomsen, 2004; Ortolano et al., 2014) by revealing that the major environmental issue of leatherworking firms was water pollution, generated due to discharging untreated contaminated water (Table 2). The other forms of pollution were identified as: air and noise pollution, which were described to be chiefly generated by running electricity generators due to shortage of power in the country. While some respondents had narrow perceptions about environmental issues because they only referred to water pollution, others had broader considerations as they mentioned about all the three forms of pollution.

<<<< Insert Table 2 here >>>>

Generally, respondents perceived that pollution from leather industry was causing a number of health issues for local communities and employees such as cancer, hepatitis and depression, in addition to negatively affecting agrarian areas and threatening the existence of marine life (Table 3). One of the respondents (SME 2) appeared to be more

environmentally aware than his peers because he expressed broader implications of pollution, which was evident of him referring to depletion of ozone layer (Table 3). Possibly, it was so because he was educated, had some experience of running a textile unit previously and had also hired an environmental manager who could inform him environmentally better.

Compared to an earlier study (Lund-Thomsen, 2004) which identified water pollution causing mental retardation, findings of this study revealed that mental stress and therefore depression was caused by noise pollution. Possibly, when the earlier study was conducted at that time issue of power shortage was not much serious in the country and researcher could not trace the health implications of electricity generators, which came up quite clearly in this study<sup>3</sup>.

<<<< Insert Table 3 here >>>>

### **Environmental practices in SMEs**

In order to minimise their negative impact on natural environment, many SMEs in leather industry have started to take different measures. As table 4 also shows, environmental initiatives of sample SMEs were not uniform<sup>4</sup>. Considering the nature of environmental initiatives, SMEs were classified as environmentally engaging (SMEs 1, 2, 3, 4, 5) and non-engaging (SMEs 6, 7, 8) firms (Table 4).

Compared to environmentally engaging SMEs, non-engaging firms were doing bare minimum by just taking energy saving measures, which seemed to be less driven by environmental logic and more by economic rationale. The practices of environmentally engaging SMEs included establishing responsible supply chains by buying inputs from environmentally certified suppliers and therefore using environmentally less harmful chemicals, getting environmental certifications for improved environmental management, adopting energy conservation processes, training staff for responsible consumption of resources and minimising solid wastes, responsible disposal of solid wastes such as selling leather trimmings to gloves manufacturers instead of burning those, responsible packaging by not using excessive packing materials, and infrastructural developments in the form of a waste water treatment plant for addressing water pollution and building separate rooms for generators to control noise pollution.

Partly, the variance in environmental practices across SMEs can be attribute to differences in resource endowment. For example, SMEs 2 and 5 were relatively mature and established firms having more financial and human resources to proactively reduce their environmental footprints. They even had wastewater treatment plants, which was quite expensive both in terms of setting it up and its operational costs.

<<<< Insert Table 4 here >>>>

### **Human capital and environmental engagement of SMEs**

Human capital can serve as an enabler of environment improvement in some SMEs, previous research has noted this (Schaper, 2002). According to some studies, compared to formal education, informal learning of environmental issues and access to environmental information can be better predictors of environmental engagement in SMEs (Gadenne et al., 2009). Some researchers have considered environmentally relevant human capital more broadly. They appreciate the importance of environmental human capital vested in both owner-managers and employees (Tilley, 2000; Cloquell-Ballester et al., 2008).

In the case of Pakistan's leather industry, findings revealed that, owner-managers of sampled SMEs had varied educational backgrounds and environment-specific human capital (Table 1). Considered together, Tables 1 and 4 show that environmentally engaging SMEs were owned and managed by better educated entrepreneurs as compared to environmentally non-engaging SMEs which were mostly owned and managed by uneducated entrepreneurs. This comparison indicates that there could be environmental implications for firms being managed by better educated owners. Possibly, because of being uneducated, owner-managers of environmentally non-engaging SMEs could not access environmental information and therefore remained environmentally under-informed resulting in negligible environmental initiatives in these firms. To some extent, summary of evidence presented in Table 1 lends support to this observation, in that, compared to owner-managers of environmentally engaging SMEs, environmentally non-engaging SMEs were not gaining environmental knowledge / information even from informal sources. These findings contrast with some earlier studies from developed economies, which suggest that formal education of owner-managers might not serve as a significant predictor of environmental practices in SMEs (Schaper, 2002; Gadenne et al., 2009). In fact, in Pakistani

context formal education of SME owner-managers appear to capacitate them to access and grasp latest environmental information for environmental improvement.

On exploring the modes of informal learning amongst environmentally engaging SMEs, it was found that, environment-specific human capital was developed through diverse means such as self-reading, learning by doing, discussions with experienced peers, and other networks such as input suppliers. For example, as a respondent explained that, in order to remain better aware of emerging environmental requirements of customers and accordingly take environmental initiatives such as using less harmful chemicals, he had developed a habit of self-reading and learning from industry experts. He also emphasised that doing so was imperative for him to better supervise his staff: *'[...] we need to know more than what the labour knows [about less harmful chemicals] [...] we study from a book or use internet or learn from more experienced people who are already in the field [...]'* (SME 2). Similarly, another respondent highlighted the value of interacting with an industry-related institute for developing better understanding of environment friendly production processes: *'Here is a vocational institute, [...] they guide us about all this that how to work and how not to do [...]'* (SME 4). In a way, these responses implicate embedding in environmental knowledge networks as a purposeful strategy to effectively address environmental issues.

Another respondent explained that, instead of personally gathering environmental information, he preferred to hire environmentally competent managers who look after the environmental matters of tannery in a better way: *'I hired a manager and a general manager [...] [t]hey are qualified people and do each and everything for me'* (SME 2). The practice of hiring environmentally knowledgeable staff was also confirmed by another respondent: *'Now in our city [...] top business community is not very well educated, but the workers who are employed [...] are all qualified. They mostly deal all the business affairs (SME 1)'*. In fact, findings about hiring environmentally competent staff by Pakistani SMEs contrast with some studies from developed countries (Schaper and Raar, 2001), which describe SMEs not having sufficient resources to recruit environmental managers. As a matter of fact, it is inevitable for some SMEs in leather industry to employ environmentally capable staff because owner-managers not having appropriate environmental knowledge and skills cannot effectively address environmental requirements of international customers.



However, in those SMEs where employees were not environmentally vigilant, lecturers and trainings were considered to overcome this shortcoming. For example, as a respondent explained that in order to control solid waste they were educating their labour on daily basis: *'We give them [employees] a lecture of about 30 minutes every day to try to minimise trimming so that not much waste is generated and gathered because waste causes pollution. So, we try to minimise it as much as possible. So, we make them listen to us every day. If we do not do this then they will significantly increase the volume of wastes' (SME 2).* Another owner-manager described that environmentally less harmful production processes were introduced to labour with the support from some chemical suppliers: *'Representatives of chemical industries who get their diplomas from abroad, say for example from Italy, about chemicals. When they come to the tannery they make a [cleaner] process to show to workers [...] so latest training is given by chemical companies' (SME 3).* These findings support some earlier studies from developed countries (Brammer et al., 2012) showing that training is imperative for environmental capacity building of employees. Moreover, these findings also highlight the importance of environmental knowledge networks for SMEs to address their environmental deficiencies.

In spite of hiring qualified staff and providing environmental training to some employees, the decision to adopt environmental practices would largely rest with SME owner-managers. Therefore, presence of environmentally qualified staff might not necessitate environmental engagement in some SMEs. Evidence revealed that some owner-managers in leather industry had gained access to environmental information through their staff, but they were not willing to invest in environmental initiatives. For such SMEs, lack of and access to environmental information and awareness (Gadenne et al., 2008; Schaper, 2002) were not barriers to environmental engagement, but absence of willingness of owner-managers to get environmentally engaged definitely was. For example, an owner-manager commented: *'[...] the 'Seth' [local term used for an owner] who is sitting, he is not that technical [...] mostly 'Seths' of our industry are not technical. Because they are not technical, they are not ready to accept what others say. So, when they are not ready to listen to others, then it is running as it is running since years' (SME 3).* Similarly, another respondent said, in fact, *'[...] everyone has knowledge but when it comes to costing everyone closes eyes' (SME 2).* In a way, these findings implicate that if availability of environmental information is

considered a necessary condition for environmental improvement in SMEs then presence of willingness of owner-managers to respond to that information would be a sufficient condition.

### **Reflections and lessons learned**

This study contributes to literature in two ways. First, it develops an understanding of environmental practices in SMEs of a developing economy, Pakistan<sup>5</sup>. It shows that while many environmental initiatives of Pakistani SMEs (Table 4) conform to findings from some developed countries (Brammer et al., 2012), some country and sector specific measures can be identified such as building separate rooms for generators to control noise pollution. Second, by exploring that both general and environment-specific human capital can enable SMEs to become environmentally responsible enterprises, it responds to the call for research to identify firm level resources, capabilities and processes that might enable environmental engagement of SMEs (Hofmann et al., 2012). It also highlights the value of networks in raising environment-specific human capital as some SMEs were collaborating with external actors for environmental improvement.

Overall, findings of this study are important in policy terms, given their focus on the enabling features of human capital in promoting environmental practices in developing countries. The findings suggest that there is considerable scope for national governments, environment support institutes and international donors to launch environmental awareness programmes for SMEs. The rationale is that well-designed and executed interventions could promote large-scale improvements in both the commercial and environmental performance of this industry. The findings also indicate that awareness programmes should aim, not simply to educate entrepreneurs and employees, but also to inspire them to pursue environmental opportunities by being receptive to new environmental knowledge, information and requirements. In this regard, regional industry associations can play a crucial role because SMEs have an established faith on their associations than any other organisations. Thus, collaboration between industry associations and environmental interventionists can be a way forward in motivating, educating and enabling SME owner-managers for increased environmental engagement.

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**Table 1**  
**SMEs interviewed**

Firms	City	Firm Size	No. of employees	Core business	Target Market	Person interviewed	Level of education	Environment specific qualification		No. of interviews
								Formal	Informal	
SME1	Sialkot	Medium	25-30	Leather Garments	Local and Foreign	Owner-manager	Undergraduate	No	Yes	1
SME2	Sheikhupura	Medium	70-80	Tannery	Local and Foreign	Owner-manager	Postgraduate	No	Yes	2
SME3	Muridkey	Small	10-12	Semi-Manufactured leather	Foreign	Owner-manager	Postgraduate	No	Yes	2
SME4	Sialkot	Medium	25-30	Leather Garments	Local and Foreign	Owner-manager	Undergraduate	No	Yes	1
SME5	Muridkey	Medium	200-240	Tannery	Local and Foreign	Senior manager	Postgraduate	No	Yes	2
SME6	Sialkot	Small	8-10	Leather Garments	Local and Foreign	Owner-manager	Undergraduate	No	No	1
SME7	Sialkot	Small	10-12	Leather Garments	Foreign	Owner-manager	No education	No	No	1
SME8	Sialkot	Small	10-15	Tannery, Leather Garments and Gloves	Local	Owner-manager	No education	No	No	1

(Source: Extracted from interviews)

**Table 2**  
**Perceived sources of pollution**

Themes	Illustrative examples
<b>Water pollution</b>	<p><i>'[...] water that we throw into drains [...] main impact comes from water [...] I think so, it is waste water [...] (SME 2).</i></p> <p><i>'Look, first of all its wastewater. That is mainly the primary issue from environmental perspective because huge volume of water is discharged in the process [...] (SME3).</i></p>
<b>Noise pollution</b>	<p><i>'[...] generators cause pollution [...] Generators are noisy and cause pollution [...]' (SME 2)</i></p>
<b>Air pollution</b>	<p><i>'[...] furnace oil has quite a significant environmental impact [...] That burns and creates carbon. And carbon is like diesel generates smoke, it also generates smoke [...]' (SME5).</i></p>

(Source: Extracted from interviews)

**Table 3**  
**Perceived impacts of pollution**

Themes	Illustrative examples
<b>Health impacts</b>	<p><i>'[...] if we see we do wrong in our tanneries [...] wastewater [...] is used to irrigate vegetables causing diseases [...] like hepatitis C, B and a lot of cancers [...]'</i> (SME 2).</p> <p><i>'It [generator] makes a lot of noise. You can say it generates a lot of depression. Everyone here is angry all the time'</i> (SME4).</p>
<b>Decline in productivity of land</b>	<i>'[...] agricultural land is disturbed by polluted water [...] [it] absorbs polluted water, which disturbs crops. Also diseases spread due to this water [...]'</i> (SME1).
<b>Damage to marine life</b>	<i>'When waste is drained into main drains, fish and other animals die due to its hazardous effects. We often see while passing by the drains that dead fish are floating on the surface of water'</i> (SME 4).
<b>Broader environmental impacts</b>	<i>'Generators [...] their waste goes into air and disturbs ozone layer [...]'</i> (SME2).

(Source: Extracted from interviews)

**Table 4**  
**Environmental practices of SMEs in Pakistan's leather industry**

Environmental measures	Environmentally Engaging SMEs					Environmentally Non-Engaging SMEs		
	SME1	SME2	SME3	SME4	SME5	SME6	SME7	SME8
Using energy saving lights and machinery	✓	✓	✓	✓	✓	✓	✓	✓
Buying chemicals from environmentally certified suppliers	✓	✓	✓	✓	✓			
Getting environmentally certified	✓	✓	✓	✓	✓			
Water treatment plant		✓			✓			
Adoption of energy efficient production processes			✓		✓			
Responsibly disposing waste				✓	✓			
Using minimum packing materials		✓			✓			
Recruiting environmentally competent staff		✓			✓			
Limited use of generator to save fuel			✓					
Careful printing of packaging materials				✓				
Workers' training for energy saving methods of production					✓			
Lectures for staff on solid waste reduction		✓						
Arrangements for exhaust of generator				✓				

(Source: Extracted from interviews)

## Notes

<sup>1</sup> According to SME policy (2007), any manufacturing concern with up to 250 employees is considered an SME in Pakistan. While small and medium sizes are not separately defined, in this study, following the norm in leather industry, firms with up to 15 employees including owner-manager are considered as small.

<sup>2</sup> Data were systematically coded for drawing major themes to inform analysis. An illustration of the coding protocols followed is a part of discussion between researcher and owner-manager of SMEs 3, where respondent referred to water pollution as a major environmental issue.

*RESEARCHER: You are attached with leather industry for last 10 to 15 years. So, what do you think, what are the major environmental issues?*

*Owner-manager SME3: Look, first of all its wastewater. That is mainly the primary issue from environmental perspective because huge volume of water is discharged in the process [...]*

**Code: EII-W**

**Coding protocols: An illustration**

<b>Descriptive Label</b>	<b>Code</b>
Water Pollution	EII-W

As the above table shows, descriptive label used to tag the concept identified in discussion was ‘water pollution’. It was coded as EII-W. Where ‘EII’ stands for environmental issues and impacts and ‘W’ represents that environmental issues and impacts are related to water pollution.

<sup>3</sup> Discussion with respondents revealed that almost every export-oriented SME had an electricity generator because of power shortfall in the country. In order to meet deadlines of their customers, they had no other choice but to run generators which were on one hand costly, and, on the other hand, a cause of air and noise pollution.

<sup>4</sup> It is possible that other SMEs in leather industry might be taking some more environmental measures that some other study with a large sample size might be able to explore.

<sup>5</sup> Limitations: While this research has provided new insights about the environmental practices of SMEs from a developing economy’s perspective, it admittedly has some limitations. The focus of this research on two districts (Sialkot and Sheikhupura) implicates a limitation that the findings are context specific and therefore are not generalizable across the industry as well as sectors. How SMEs established in other regions (for example, Kasur, Lahore and Karachi) may respond to the research quires can bring more insights about the research topic. Moreover, this study has only explored the influence of human capital on environmental practices in SMEs, future research can expand the list of enabling factors.